

Writing Equations of Quadratics:

Write the equation of the quadratic function (in vertex form) using the given information:

- 1) vertex is $(3, 7)$ and a point on the graph is $(9, 4)$

$$y = a(x-h)^2 + k$$

$$4 = a(9-3)^2 + 7$$

$$4 = a(6)^2 + 7$$

$$4 = 36a + 7$$

$$\frac{-3}{36} = \frac{36a}{36} \quad a = -\frac{1}{12}$$

$$a = -\frac{1}{12} \quad (3, 7)$$

$$y = -\frac{1}{12}(x-3)^2 + 7$$

- 2) vertex is $(3, 6)$ and the y -intercept is $(0, 2)$

$$y = a(x-h)^2 + k$$

$$2 = a(0-3)^2 + 6$$

$$2 = a(-3)^2 + 6$$

$$2 = 9a + 6$$

$$\frac{-4}{9} = \frac{9a}{9} \quad a = -\frac{4}{9}$$

$$a = -\frac{4}{9} \quad (3, 6)$$

$$y = -\frac{4}{9}(x-3)^2 + 6$$

3) vertex is (0,5) and a point on the graph is (1,-2)

4) vertex is $\overset{h}{-1}, \overset{k}{-4}$ and the $\overset{\text{a point}}{\text{y-intercept}}$ is $\overset{x}{0}, \overset{y}{3}$

$$y = a(x-h)^2 + k$$

$$a = 7 \quad (-1, -4)$$

$$3 = a(0+1)^2 - 4$$

$$3 = a(1)^2 - 4$$

$$3 = a - 4$$

$$7 = a$$

$$\boxed{y = 7(x+1)^2 - 4}$$

Homework: 11/15/12

handout:

writing quadratic
equation given

vertex and a point